National Nuclear Security Administration

Nevada Operations Office News

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National Nuclear Security Administration Scientists to Conduct Mario Subcritical Experiment

Scientific Data to Help Certify and Ensure the Safety and Reliability Of the Nation's Stockpile

The National Nuclear Security Administration Nevada Operations Office will conduct a subcritical experiment called *Mario* at the Nevada Test Site on Thursday, August 29, 2002.

Subcritical experiments examine the behavior of plutonium as it is strongly shocked by forces produced by chemical high explosives. Subcritical experiments produce essential scientific data and technical information used to help maintain the safety and reliability of the nuclear weapons stockpile. The experiments are subcritical; that is, no critical mass is formed and no self-sustaining nuclear chain reaction can occur, thus there is no nuclear explosion.

Mario, a Los Alamos National Laboratory (LANL) subcritical experiment, is designed to answer questions about ejecta and spall associated with plutonium. Ejecta is a forceful spray of particles propelled from a material's surface when it is compressed by a powerful shock wave. Spall is the breakup of material from the explosive shock wave reflected back from the surface.

Subcritical experiments are conducted at the Nevada Test Site's U1a Complex located 85 miles northwest of Las Vegas. The U1a Complex is designed to contain these experiments in a safe and secure environment in an underground laboratory of horizontal tunnels with small excavated experiment alcoves mined at the base of a vertical shaft, approximately 960 feet beneath the surface.

Los Alamos scientists conducted their last subcritical experiment, *Vito*, on February 14, 2002. The last subcritical experiment was *Oboe 9* conducted on June 7, 2002.